

Public Safety Radio Strategic Planning Committee

Remote Radio Site Management

A Case for a Coordinated Approach

Chief Reginald Chappelle, California Highway Patrol
PSRSPC member
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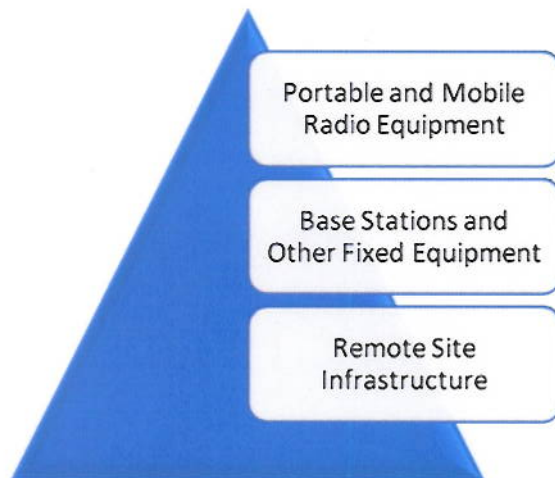
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Summary/Problem Statement

Remote radio sites are the foundation of any land mobile radio communications system. These sites are the backbone on which public safety voice communications sit. Radio system replacement or upgrade projects cannot focus solely on the radio equipment infrastructure (controllers, base stations, etc.) and the radio equipment itself. Consideration must be given to the condition and age of the vaults and towers, as well as current or future land use issues. These infrastructure pieces are often overlooked because the sites serve several tenants; all of whom may presume that the other is responsible for these critical components.

Expensive radio equipment and the systems they support are only as good as the integrity of the vault and tower that houses them. Currently, no single point of coordination or control exists for the state's remote site infrastructure. It is imperative that the state's remote site development, management, maintenance and documentation responsibilities are centrally coordinated. This is not to imply that any single entity can or should own and manage every site. It is reasonably, however, that a single entity can create and maintain a consolidated data library of all of the state's radio infrastructure assets – particularly those assets that support public safety and first responder agencies. That information is crucial for daily system support, short and long range planning, and disaster recovery.



The Public Safety Radio Strategic Planning Committee (PSRSPC) has a clear mandate to ensure effective coordination and management of the state's public safety radio systems. PSRSPC's oversight of the state's public safety radio system cannot focus on spectrum or radio equipment specifications to the exclusion of infrastructure. Radio equipment and spectrum needs an infrastructure backbone. PSRSPC must take a holistic view of this statutory requirement and extend management and oversight of those systems to its remote radio site infrastructure. "Operability" is directly related to the condition of the remote site infrastructure.

Background

The age and condition of the state's remote radio sites varies widely, with most in need of renovation. The CHP and the Department of General Services (DGS) are currently managing large scale communications systems projects which require the upgrade of radio vault sites used by various agencies. CHP is in year three of a five year project to enhance its existing statewide radio system. DGS is replacing the analog microwave system with a new state-of-the-art digital system. Each of these projects have shed light on the need for minor to major repairs, including renovation, expansion, or complete infrastructure replacement of the remote site facility and communications equipment.



The California Highway Patrol Enhanced Radio System Project (CHPERS)

In 2006, CHP, in conjunction with DGS, conducted 85 radio site surveys in CHP's Central and Valley Divisions to assess and determine what renovations, if any, must be made in order to fulfill the requirements of the CHPERS project. CHP and DGS found that many of the sites are in dire need of repairs and renovation before installing replacement and additional equipment. CHPERS has funding allocated for site improvements; however, many of the repairs identified in the site surveys are beyond general improvements.

The CHP currently has radio base station equipment installed at 301 radio vault sites statewide. These include radio vault sites that are maintained and operated by CHP, as well as sites that are leased from other state agencies or from private industry.

The general repairs necessary vary from site to site because of climate and other variables. Many of the radio vault sites are located on mountaintops, and access requires traversing rugged terrain on poorly maintained roads. Listed below are some of the primary concerns identified during recent remote radio site surveys:

- Leaking roofs due to decay of structure materials.
- Sagging and unstable flooring due to exposure to moisture.
- Treacherous (and, in some cases impassable) and poorly maintained access roads.
- Aged and damaged solar panels.
- Faded exterior paint that does not conform to local, state, and federal ordinances.
- Faded paint on propane tanks that does not conform to local, state, and federal ordinances.
- Missing or faded propane tank safety labels that do not conform to local, state, and federal ordinances.
- Aging electrical generators that will require replacement in the next one to two years.
- Lack of vault space for future equipment needs.
- Antenna towers that cannot accommodate additional antennas or microwave dishes.
- Antenna towers in disrepair due to corrosion, inadequate grounding, and overcrowding.



Furthermore, of the 301 radio vault sites utilized, only 24 of the sites are currently owned by CHP and the remaining sites are leased from federal agencies, other state agencies, or private industry. Conducting repairs on leased sites poses problems as it requires coordination with the lessor in regard to what repairs can be made and who will incur the cost.



- Much of the infrastructure equipment located at these remote sites is beyond its intended design life and many mountaintop installations and remote site facilities are not in compliance with Federal regulations with regard to the consolidation of vault structures. Many vaults contain decommissioned radio equipment that has been left behind by the owners.

While this sounds like a CHP problem, it is actually a problem for all tenants of all state-occupied sites. The CHPERS project merely brought attention to what may have appeared in the past to be an isolated issue. Because these facilities are unoccupied, there is no sense of urgency - out of sight, out of mind.



Department of General Services State Microwave Upgrade Project

The Department of General Services is managing a \$90 million project to upgrade the Public Safety Microwave Network (PSMN) from an obsolete analog network to a state of the art digital network. The current microwave system is utilized by public safety agencies throughout the state including law enforcement, fire, highway maintenance, forestry, and conservation. It is one of the largest public safety microwave networks in the world and includes 311 radio vault sites, covering more than 6,000 path miles and ten primary routes. The new digital system will have additional channel capacity, less inherent system channel noise, additional network routes, and greater reliability.

The scope of this project requires renovation of remote radio sites. In 1999 DGS provided a report to the Legislature, in which they determined 168 of the state's 311 microwave sites require minor to major renovations in order to support the new system. DGS has indicated 25 percent of the vault space at the affected sites would be needed for the digital microwave system equipment; indicating that most of the vaults will require expansion.

Per Government Code Section 15252 through 15253, DGS is authorized to improve and coordinate the use of radio and other communications facilities owned and operated by the state, as well as with cities and counties in order to eliminate duplication and interference for economies which could not otherwise be obtained. DGS has the responsibility to leverage its purchasing power as a single entity, providing value to the dollars for the operation, and maintenance of infrastructure technologies and expand services at the lowest cost to the state. The use of consolidated services is an essential element to the successful delivery of public safety services within state government. The same leverage or methodology can be applied to radio vault site construction and/or improvements. DGS can implement or require state agencies to pay their equitable share when improvements or construction is required. In the same sense, DGS can facilitate the partnership and placement of private industry radio vault sites in order to benefit all state agencies.

Conclusion/Summary

"If not you, who? If not now, when?"

Abraham Maslow

PSRSPC should create guidelines for remote site development, management, maintenance and documentation.

- The Committee should coordinate the creation and maintenance of a database that contains a consolidated inventory of remote site radio equipment; a list of installed and active radio equipment by agency and frequency; and, a listing of vault, tower and real property owners and site managers (to include lease terms and site access issues).
- The Committee should incorporate remote site assessment into the radio system project approval process to ensure consideration has been given to relevant radio site issues (not merely the replacement of existing equipment).
- The Committee should maintain a listing of remote sites that are scheduled for modification or upgrade so that project efforts and funding can be consolidated and duplicate funding requests eliminated.
- The Committee should create and maintain a capital infrastructure replacement plan for the remote site infrastructure and seek funding as appropriate.
 - The Department of General Services may be in a position to provide guidance and support for this effort.



Appendices

California Government Code Sections 8592 – 8592.7

8592. This article shall be known and may be cited as the Public Safety Communication Act of 2002.

8592.1. For purposes of this article, the following terms have the following meanings:

(a) "Backward compatibility" means that the equipment is able to function with older, existing equipment.

(b) "Committee" means the Public Safety Radio Strategic Planning Committee, which was established in December 1994 in recognition of the need to improve existing public radio systems and to develop interoperability among public safety departments, and between state public safety departments and local or federal entities and which consists of representatives of the following state entities:

(1) The Office of Emergency Services, who shall serve as chairperson.

(2) The California Highway Patrol.

(3) The Department of Transportation.

(4) The Department of Corrections and Rehabilitation.

(5) The Department of Parks and Recreation.

(6) The Department of Fish and Game.

(7) The Department of Forestry and Fire Protection.

(8) The Department of Justice.

(9) The Department of Water Resources.

(10) The State Department of Public Health.

(11) The Emergency Medical Services Authority.

(12) The Department of General Services.

(13) The Office of Homeland Security.

(14) The Military Department.

(15) Department of Finance.

(c) "First response agencies" means public agencies that, in the early stages of an incident, are responsible for, among other things, the protection and preservation of life, property, evidence, and the environment, including, but not limited to, state fire agencies, state and local emergency medical services agencies, local sheriffs' departments, municipal police departments, county and city fire

departments, and police and fire protection districts.

(d) "Nonproprietary equipment or systems" means equipment or systems that are able to function with another manufacturer's equipment or system regardless of type or design.

(e) "Open architecture" means a system that can accommodate equipment from various vendors because it is not a proprietary system.

(f) "Public safety radio subscriber" means the ultimate end user. Subscribers include individuals or organizations, including, for example, local police departments, fire departments, and other operators of a public safety radio system. Typical subscriber equipment includes end instruments, including mobile radios, hand-held radios, mobile repeaters, fixed repeaters, transmitters, or receivers that are interconnected to utilize assigned public safety communications frequencies.

(g) "Public safety spectrum" means the spectrum allocated by the Federal Communications Commission for operation of interoperable and general use radio communication systems for public safety purposes within the state.

8592.2. (a) The committee shall have primary responsibility in state government for both of the following:

(1) Developing and implementing a statewide integrated public safety communication system that facilitates interoperability among state public safety departments listed in subdivision (b) of Section 8592.1 and other first response agencies, as the committee deems appropriate.

(2) Coordinating other shared uses of the public safety spectrum consistent with decisions and regulations of the Federal Communications Commission.

(b) In order to facilitate effective use of the public safety spectrum, the committee shall consult with any regional planning committee or other federal, state, or local entity with responsibility for developing, operating, or monitoring interoperability of the public safety spectrum.

(c) The committee shall meet at least twice a year, of which one meeting shall be a joint meeting with the California Statewide Interoperability Executive Committee to enhance coordination and cooperation at all organizational levels and a cohesive approach to communications interoperability.

8592.3. (a) The committee shall consult with the following organizations and entities:

- (1) California State Peace Officers Association.
- (2) California Police Chiefs Association.
- (3) California State Sheriffs' Association.
- (4) California Professional Firefighters.
- (5) California Fire Chiefs Association.
- (6) California State Association of Counties.
- (7) League of California Cities.
- (8) California State Firefighters Association.
- (9) California Coalition of Law Enforcement Associations.
- (10) California Correctional Peace Officers Association.
- (11) CDF Firefighters.
- (12) California Union of Safety Employees.

(b) Each organization or entity listed in subdivision (a) may designate a representative to work with the committee to develop agreements for interoperability or other shared use of the public safety spectrum between the state public safety departments listed in subdivision (b) of Section 8592.1 and local or federal agencies that operate a communication system on the public safety spectrum and that have capacity and technical ability for interoperability or other shared use.

(c) The committee shall develop a model memorandum of understanding that sets forth general terms for interoperability or other shared uses among jurisdictions, which may be modified as necessary for a particular agreement entered into pursuant to subdivision (b).

(d) A local agency may not be required to adopt the model memorandum of understanding developed pursuant to subdivision (c).

8592.4. (a) The committee shall determine which state public safety departments listed in subdivision (b) of Section 8592.1 need new or upgraded communication equipment and shall establish a program for equipment purchase. In establishing this program, the committee shall recommend the purchase of public safety radio subscriber equipment that will enable state agencies to commence conforming to industry and governmental standards for interoperability as set forth in Section 8592.5. As technology continues to evolve, the committee shall recommend the purchase of nonproprietary equipment or systems that have open architecture and backward compatibility, and that are

in compliance with paragraphs (1) and (2) of subdivision (a) of Section 8592.5.

(b) The committee may recommend to any other federal, state, regional, or local entity with responsibility for developing, operating, or monitoring interoperability of the public safety spectrum, the purchase of public safety radio subscriber equipment that will enable first response agencies to commence conforming to industry and governmental standards for interoperability as set forth in paragraphs (1) and (2) of subdivision (a) of Section 8592.5. As technology continues to evolve, the committee may recommend the purchase of nonproprietary equipment or systems that have open architecture and backward compatibility, and that are in compliance with paragraphs (1) and (2) of subdivision (a) of Section 8592.5.

(c) This section does not mandate that a state or local governmental agency affected by this section is required to compromise its immediate mission or ability to function and carry out its existing responsibilities.

8592.5. (a) Except as provided in subdivision (c), a state department that purchases public safety radio communication equipment shall ensure that the equipment purchased complies with applicable provisions of the following:

(1) The common system standards for digital public safety radio communications commonly referred to as the "Project 25 Standard," as that standard may be amended, revised, or added to in the future jointly by the Associated Public-Safety Communications Officials, Inc., National Association of State Telecommunications Directors and agencies of the federal government, commonly referred to as "APCO/NASTD/FED."

(2) The operational and functional requirements delineated in the Statement of Requirements for Public Safety Wireless Communications and Interoperability developed by the SAFECOM Program under the United States Department of Homeland Security.

(b) Except as provided in subdivision (c), a local first response agency that purchases public safety radio communication equipment, in whole or in part, with state funds or federal funds administered by the state, shall ensure that the equipment purchased complies with paragraphs (1) and (2) of subdivision (a).

(c) Subdivision (a) or (b) shall not apply to either of the following:

(1) Purchases of equipment to operate with existing state or local communications systems where the latest applicable standard will not

be compatible, as verified by the Telecommunications Division of the Department of General Services.

(2) Purchases of equipment for existing statewide low-band public safety communications systems.

(d) This section may not be construed to require an affected state or local governmental agency to compromise its immediate mission or ability to function and carry out its existing responsibilities.

8592.6. (a) The committee shall report to the Legislature by January 1 of each year on the committee's progress in implementing this article.

(b) (1) The annual report shall serve as the state's strategic plan to establish a statewide integrated, interoperable public safety communications network. The report shall include, but not be limited to, implementation strategies and timelines to achieve the goals and objectives set forth in the report. The implementation strategies and timelines may include identification of resource needs, including data formats, possible funding sources, prioritization of expenditures, and the development of common protocols that build upon industry and governmental standards for interoperability as set forth in paragraphs (1) and (2) of subdivision (a) of Section 8592.5 that will advance the integration of local, regional, and statewide interoperable public safety communication networks. The report shall be updated annually, as strategies, timelines, goals, and objectives are accomplished or changed.

(2) In developing the report, the committee, at its discretion, shall consult with any other local, regional, state, or federal entity with responsibility for developing, operating, or monitoring interoperability of the public safety spectrum, and other first response agencies. The report may include recommendations for local, regional, state, or federal entities to coordinate resources and the development of common protocols to advance the integration of local, regional, and statewide interoperable public safety communication networks.

(c) The report will include a complete listing of purchases by state departments of public safety radio communications equipment, for which a waiver of subdivision (a) of Section 8592.5 was granted by the committee.

8592.7. (a) A budget proposal submitted by a state agency for support of a new or modified radio system shall be accompanied by a

technical project plan that includes all of the following:

- (1) The scope of the project.
- (2) Alternatives considered.
- (3) Justification for the proposed solution.
- (4) A project implementation plan.
- (5) A proposed timeline.
- (6) Estimated costs by fiscal year.

(b) The committee shall review the plans submitted pursuant to subdivision (a) for consistency with the statewide integrated public safety communication strategic plan included in the annual report required pursuant to Section 8592.6.

(c) The Telecommunications Division of the Department of General Services shall review the plans submitted pursuant to subdivision (a) for consistency with the technical requirements of the statewide integrated public safety communication strategic plan included in the annual report required pursuant to Section 8592.6.

California Government Code Sections 15250 – 15254

15250. This part may be cited as the California State Communications Law.

15251. As used in this part, "department" means Department of General Services.

15252. The purpose of this part is to improve and coordinate the use of public safety radio and other public safety communications facilities owned and operated by the state, and to coordinate and cooperate with cities, counties, and other political subdivisions thereof, in order to eliminate duplications and interferences, to bring about economies that could not otherwise be obtained.

15253. This part shall apply only to those communications facilities which are owned and operated by public agencies in connection with official business of law enforcement services, fire services, natural resources services, agricultural services, and highway maintenance and control of the state or of cities, counties, and other political subdivisions in this state. This part shall not be construed as conferring upon the Department of General Services

control of programs or broadcasts intended for the general public.

15254. Radio and other communications facilities owned or operated by the state and subject to the jurisdiction of the Department of General Services shall not be used for political, sectarian, or propaganda purposes. Such facilities shall not be used for the purpose of broadcasts intended for the general public, except for fire, flood, frost, storm, catastrophe, and such other warnings and information for the protection of the public safety as the department may prescribe.